

What Is Claimed Is:

1 1. A flat panel display allowing repair of data line defects,
2 comprising:

3 a plurality of gate lines and a plurality of data lines
4 intersecting to define a plurality of pixel regions;
5 a plurality of pixel electrodes disposed in the pixel regions
6 respectively;

7 a plurality of first shielding metal lines disposed between the
8 pixel electrodes and the data lines in the pixel regions
9 respectively, each first shielding metal line separated
10 from the others; and

11 at least two first backup wires across the adjacent first
12 shielding metal line and data line, wherein the first
13 backup wires are isolated from the data lines or the first
14 shielding metal lines or isolated from both of them.

1 2. The flat panel display of claim 1, wherein the first backup
2 wires extend from the data lines.

1 3. The flat panel display of claim 2, wherein a plurality of
2 overlap points of the first backup wires and the first shielding metal
3 lines act as a plurality of repair points.

1 4. The flat panel display of claim 2, wherein the first
2 shielding metal lines and the gate lines are in a first metal layer,
3 and the first backup wires and the data lines are in a second metal
4 layer.

1 5. The flat panel display of claim 2, wherein the first backup
2 wires and the data lines are in a first metal layer, and the first
3 shielding metal lines and the gate lines are in a second metal layer.

1 6. The flat panel display of claim 1, wherein the first backup
2 wires extend from the first shielding metal lines.

1 7. The flat panel display of claim 6, wherein a plurality of
2 overlap points of the first backup wires and the data lines act as
3 a plurality of repair points.

1 8. The flat panel display of claim 6, wherein the first backup
2 wires, the first shielding metal lines and the gate lines are in a
3 first metal layer, and the data lines are in a second metal layer.

1 9. The flat panel display of claim 6, wherein the data lines
2 are in a first metal layer, and the first backup wires, the first
3 shielding metal lines and the gate lines are in a second metal layer.

1 10. The flat panel display of claim 1, wherein the first backup
2 wires are isolated from the data lines and the first shielding metal
3 layer.

1 11. The flat panel display of claim 10, wherein a plurality
2 of overlap points of the first backup wires, the data lines, and the
3 first shielding metal lines act as a plurality of repair points.

1 12. The flat panel display of claim 10, wherein the first backup
2 wires and the gate lines are in a first metal layer, and the first
3 shielding metal layer and the data lines are in a second metal layer.

1 13. The flat panel display of claim 10, wherein the first
2 shielding metal layer and the data lines are in a first metal layer,
3 and the first backup wires and the gate lines are in a second metal
4 layer.

1 14. The flat panel display of claim 1, further comprising:
2 a plurality of second shielding metal lines disposed between
3 the pixel electrodes and the gate lines in the pixel regions

4 respectively, each first shielding metal line separated
5 from the others; and
6 at least two second backup wires across the adjacent second
7 shielding metal line and gate line, wherein the second
8 backup wires are isolated from the gate lines or the second
9 shielding metal lines or isolated from both of them.

1 15. The flat panel display of claim 14, wherein the second
2 backup wires extend from the gate lines.

1 16. The flat panel display of claim 15, wherein a plurality
2 of overlap points of the second backup wires and the second shielding
3 metal lines act as a plurality of repair points.

1 17. The flat panel display of claim 14, wherein the second
2 backup wires extend from the second shielding metal lines.

1 18. The flat panel display of claim 17, wherein a plurality
2 of overlap points of the second backup wires and the gate lines act
3 as a plurality of repair points.

1 19. The flat panel display of claim 14, wherein the second
2 backup wires are isolated from the gate lines and the second shielding
3 metal layer.

1 20. The flat panel display of claim 19, wherein a plurality
2 of overlap points of the second backup wires, the gate lines, and
3 the second shielding metal lines act as a plurality of repair points.

1 21. A repair method for a flat panel display allowing repair
2 of data line defects, comprising:

3 providing a flat panel display including

4 a plurality of gate lines and a plurality of data lines
5 intersecting to define a plurality of pixel regions;

6 a plurality of pixel electrodes disposed in the pixel
7 regions respectively;
8 a plurality of first shielding metal lines disposed between
9 the pixel electrodes and the data lines in the pixel
10 regions respectively, each first shielding metal line
11 separated from the others; and
12 at least two first backup wires across the adjacent first
13 shielding metal line and data line, wherein the first
14 backup wires are isolated from the data lines or the
15 first shielding metal lines or isolated from both of
16 them; and
17 in the event of a defect being detected in a first data line,
18 one of the first shielding metal lines adjacent to the
19 defect being selected, a pair of first backup wires on both
20 sides of the defect being electrically connected to the
21 first data line and the selected first shielding metal
22 line.

1 22. A repair method for a flat panel display allowing repair
2 of data line defects, comprising:
3 providing a flat panel display including
4 a plurality of gate lines and a plurality of data lines
5 intersecting to define a plurality of pixel regions;
6 a plurality of pixel electrodes disposed in the pixel
7 regions respectively;
8 a plurality of first shielding metal lines disposed between
9 the pixel electrodes and the data lines in the pixel
10 regions respectively, each first shielding metal line
11 separated from the others;
12 at least two first backup wires across the adjacent first
13 shielding metal line and data line, wherein the first
14 backup wires are isolated from the data lines or the

15 first shielding metal lines or isolated from both of
16 them;
17 a plurality of second shielding metal lines disposed between
18 the pixel electrodes and the gate lines in the pixel
19 regions respectively, each first shielding metal line
20 separated from the others; and
21 at least two second backup wires across the adjacent second
22 shielding metal line and gate line, wherein the second
23 backup wires are isolated from the gate lines or the
24 second shielding metal lines or isolated from both
25 of them;
26 in the event of a first defect being detected in a first data
27 line, one of the first shielding metal lines adjacent to
28 the first defect is selected, with a pair of first backup
29 wires on both sides of the first defect electrically
30 connected to the first data line and the selected first
31 shielding metal line; and
32 in the event of a second defect being detected in a first gate
33 line, one of the second shielding metal lines adjacent to
34 the second defect is selected, with a pair of second backup
35 wires on both sides of the second defect electrically
36 connected to the first gate line and the selected second
37 shielding metal line.